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EXAMINER: LYNDA SALVATORE

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REPLY BRIEF (11 PAGES)

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN THE APPLICATION OF:

ROBERT ANTHONY MARIN ET. AL.

CASE NO.: TK3410 US NA

SERIAL NO.: 09/691,273

GROUP ART UNIT: 1771

FILED: OCTOBER 18, 2000

EXAMINER: LYNDAL SALVATORE

FOR: FLASH-SPUN SHEET MATERIAL

REPLY BRIEF UNDER 37 C.F.R. §41.41

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Responsive to the Examiner's Answer mailed May 3, 2006 as to the above-referenced application, Appellants submit the following Reply Brief.

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ARGUMENT

Claims 2-4, 7-18, and 24-30 stand rejected under 35 U.S.C. §103(a) as obvious in view of either McGinty et al. (U.S. Patent No. 6,010,970) or alternatively over Harriss et al. (WO 98/39509) in view of Blades (U.S. Patent No. 3,081,519).

Initially, Appellants submit that McGinty et al. is unavailable as prior art under 35 U.S.C. §103(c), since it is co-assigned to the assignee of the present application (reel 009322/frame 0035), and published after the priority date of the present application. Appellants positively assert their protection under 35 U.S.C. §103(c), and confirm that the McGinty et al. application was owned by the present assignee at the time the presently claimed invention was made.

The Examiner's Answer

A. The Purported Prima Facie Case of Obviousness

1. Appellants have stated in the Appeal Brief (page 7, last paragraph) that the Examiner's proposed combination of the Harriss et al. and Blades et al. references amounts to an impermissible "obvious to try" standard of patentability. The Examiner's statements in the Examiner's Answer confirm Appellants' position.

[I]t is the position of the Examiner that it would be obvious to try the spin temperature of Blades et al., in the flash spinning process taught by Harriss et al., to produce a plexifilamentary fiber consistent in scope with Applicant's. (Examiner's Answer, page 8, first paragraph; emphasis added).

Withdrawal of the rejections and allowance of the claims is requested on this basis alone.

2. The Examiner points out that Blades et al. suggests the use of hydrocarbons as spin agents.

Blades et al., was relied upon to teach that the claimed spinning temperatures are known in the art and employed with a wide variety of spin agents including hydrocarbons (column 8, 20-31). The Examiner considers the broad disclosure of hydrocarbons to include the claimed pentane and cyclopentane. (Examiner's Answer, page 7, last paragraph, bridging to page 8).

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The portion of the Blades et al. reference cited by the Examiner states:

Among those liquids which may [be] utilized in the spinning process, depending upon the particular polymer used, are aromatic hydrocarbons such as benzene, toluene, etc.; aliphatic hydrocarbons such as butane, pentane, hexane, heptane, octane, and their isomers and homologs; alicyclic hydrocarbons such as cyclohexane; unsaturated hydrocarbons; halogenated hydrocarbons such as methylene chloride, carbon tetrachloride, chloroform, ethyl chloride, methyl chloride; alcohols; esters; ethers; ketones; nitriles; amides; fluorocarbons; sulfur dioxide; carbon disulfide; nitromethane; water; and mixtures of the above liquids. (Col. 8, lines 20-31; emphasis added).

Notably absent from the above-quoted portion of Blades et al. is any disclosure of suitable temperature ranges at which the flash spinning process can be conducted. For support of suitable temperature ranges, the Examiner jumps to column 13 of Blades et al., Example V, which is clearly directed to use of a methylene chloride spin agent.

As-spun, undrawn plexifilament strands prepared from linear polyethylene using methylene chloride and conditions indicated in Table IV were tested for... (col. 13, lines 16-18, et seq.; emphasis added).

As such, Appellants respectfully submit that the skilled artisan would not have been guided by Blades et al. to apply temperature conditions disclosed for use with methylene chloride spin agents (Example V), to spin agents of pentane/cyclopentane mixtures (never literally disclosed in Blades et al.), especially in view of the fact that the broad spin agent disclosure of Blades et al. as cited by the Examiner (col. 8, lines 20-31), clearly contains methylene chloride in the recitation, the exact spin agent of Example V. That is, why would the skilled artisan have been at all motivated to apply the temperatures of Example V (col. 13) to any other spin agent listed at column 8, besides methylene chloride? The Examiner's position is exactly the type of cherry-picking forbidden by In re Wesslau.

It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full

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appreciation of what such reference fairly suggests to one of ordinary skill in the art. In re Wesslau, 147 USPQ 391, 393 (CCPA 1965).

The rejection must be based upon the combined teachings of the prior art as a whole, without picking only those portions of the prior art which support the rejection. In re Vaeck, (citation omitted).

If the skilled artisan were to consider the cited references as a whole in order to determine what aspects of the flash spinning process interact, the specifics of Harriss et al. would be first taken into account.

Polymer solution (or spin liquid) is continuously or batch-wise prepared at an elevated temperature and pressure in a mixing system or supply tank (not shown). The pressure of the solution is greater than autogenous pressure, and preferably greater than the cloud-point pressure for the solution. Autogenous pressure is the equilibrium pressure of the polymer solution in a closed vessel, filled with only solution having both liquid and vapor phases therein, and wherein there are no outside influences or forces. Autogenous pressure is a function of temperature. By providing the solution at greater than autogenous pressure, it is assured that the solution will not have any separate vapor phase present therein. The cloud-point pressure of the solution is the lowest pressure at which the polymer is fully dissolved in the solvent so as to form a homogeneous single phase mixture.

The polymer solution is admitted from the preparation tank through a pressurized supply conduit 13 and an orifice 15 into a lower pressure (or letdown) chamber 16. In the lower pressure chamber 16, the solution separates into a two-phase liquid-liquid dispersion, as is disclosed in U.S. Pat. No. 3,227,794 to Anderson et al. One phase of the dispersion is a solvent-rich phase comprising primarily solvent and the other phase of the dispersion is a polymer-rich phase containing most of the polymer. This two phase liquid-liquid dispersion is forced through a spinneret 14 into an area of much lower pressure (preferably atmospheric pressure) where the solvent expands and evaporates very rapidly (flashes), and the polyolefin emerges from the spinneret as a plexifilamentary strand 20. (Page 6, lines 1-21; emphasis added).

From this disclosure of Harriss et al., it is clear that the spinning temperature must be selected such that the pressure of the system is above the autogenous pressure, and that the solvent/polymer solution must separate into solvent-rich and polymer-rich phases upon letdown in pressure. Nothing in Blades et al. would provide the skilled artisan with enough guidance to select the particular temperature ranges claimed in

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the present application for use in the Harriss et al. flash spinning process, which utilizes a mixed pentane/cyclopentane spin agent.

The *prima facie* case of obviousness is deficient for this reason, and the rejection should be withdrawn.

3. Likewise, the skilled artisan could not have had a reasonable expectation of success in flash spinning polyethylene from a mixed pentane/cyclopentane spin agent, based upon the temperature ranges of Blades et al., directed to spinning in methylene chloride spin agent. The skilled artisan could just as reasonably conclude that the higher temperature range of Blades et al.'s Example V might result in too high a pressure within the letdown chamber to accomplish phase separation with the Harriss et al. mixed hydrocarbon spin agent.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on the applicant's disclosure. MPEP § 2142, citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991); (emphasis added).

Withdrawal of the rejections is requested on this basis, as the Examiner's proposed combination of reference teachings fails to meet the requirements for a *prima facie* case of obviousness as set forth in Vaeck.

4. At page 8 of the Examiner's Answer, the Examiner appears to respond to Appellants' statements at page 6 of the Appeal Brief (first full paragraph), wherein Appellants' state:

On a technical level, one of skill in the art would not have been motivated to modify Harriss et al., which discloses improved sheets for bar code printing, in the manner suggested by Example V of Blades et al., since the strands of Blades et al. are (1) not disclosed to be bonded into a nonwoven sheet, and (2) are disclosed to be soft, and

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thus unsuitable for a printing surface, such as desired in Harriss et al. which discloses a high degree of thermal bonding of the sheet to provide for a smooth, reflective sheet surface (page 11, lines 1-27). Technically, the references are improperly combined and therefore no *prima facie* case of obviousness can be said to have been established.

In response, the Examiner states:

[I]t is the position of the Examiner that there is nothing on record to evidence that the strands of Blades et al., could not be employed to also form non-woven fabrics...In fact, Blades et al. teach that the so formed plexifilamentary strands can be beaten and chopped (column 7, lines 16-20). The Examiner asserts that it is well known in the textile art that chopped fibers are used to form non-woven fabrics.

Aside from the fact that the Examiner seems to be relying on what is not in the Blades et al. reference for support of her contentions, and that the present sheet claims (29 and 30) are directed to those having "substantially continuous" fibers, the Examiner's rebuttal misses the point of Appellants' argument. Appellants are not suggesting that forming nonwoven sheets from the Blades et al. fibers is beyond the pale. Instead, Appellants assert that the benefit disclosed in Blades et al. in Example V (which are relied upon by the Examiner for motivation to apply the temperature range of Blades et al. to Harriss et al.), i.e. "softness", is immaterial to the invention of Harriss et al., and in fact would be detrimental to the Harriss et al. sheet products, which necessitate a hard surface for printing.

Once again, Appellants question if the skilled artisan would have been properly motivated to combine the cited references in this fashion? We think not. Withdrawal of the rejections is requested.

B. The Comparative Data

At pages 8-9 of the Examiner's Answer, the Examiner dismisses the value of the comparative data cited by Appellants.

With regard to Applicant's lack of inherency arguments as to the Frazier Permeability, hydrostatic head, crush value, surface area and Gurley Hill Porosity values, the Examiner maintains that said values would inherently be present once the plexifilamentary strands are provided...Applicant has not provided any evidence to suggest that the instant resulting Frazier Permeability, hydrostatic head, crush value,

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surface area and Gurley Hill Porosity values are unexpected. In other words, Applicant has not shown a comparison between the relied upon examples and the instant invention produced under the claimed conditions. Absent such evidence, the Examiner asserts that the Frazier Permeability, hydrostatic head, crush value, surface area and Gurley Hill Porosity values are inherent to the plexifilamentary strands provided by the combination of Harriss et al., in view of Blades et al. (Emphasis added).

The Board's attention is redirected to Appellants' comparison between Comparative Example B (C.E. B) of the present invention, and Comparative Example 1 (C.E. 1) of Harriss et al., which Appellants believe is the closest prior art example present in any reference. The table below summarizes the spinning conditions and performance conditions of the two examples, as well as Comparative Example A (C.E. A) of the present application, which may be even closer to Comparative Example 1 of Harriss et al., as discussed below. The data for the present comparative examples is derived from the present application beginning at page 20, line 23, continuing to page 27.

Parameter	C.E. 1 (Harriss et al.)	C.E. A	C.E. B
Polymer	HD polyethylene	HD polyethylene	HD polyethylene
Spin agent	32% cyclo-/68% n-C5	40% cyclo-/60% n-C5	40% cyclo-/60% n-C5
Polymer concentration	18.7%	19.4%	17%
Spin temperature (°C)	185	180	190
Bonding	"Palmer bond" ¹	Whole surface	Point bonded/softened
Surface area (m ² /g)	N.D. ²	N.D.	15.5 ³ /14.78 ⁴
Frazier (cfm/ft ²) as bonded	N.D.	Too low to measure	Too low to measure
Gurley Hill (seconds) as bonded	N.D.	90	8
Hydrohead (cm) bonded	N.D.	55	107
Crush value (mm/g)	N.D.	N.D.	0.61

1 Using a "smooth metal drum" (Harriss et al., page 18, lines 6-7).

2 Not disclosed

3 Table 2, page 25

4 Table 3, page 27

1. Appellants' proposed comparison, above, is submitted to demonstrate that the closest prior art example, C.E. 1 of Harriss et al., does not inherently have the various performance and barrier properties of the present claims. Since Harriss et al. was not directed to making fabrics with good air permeability, high liquid barrier, and the

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like, but instead was directed to making sheets suitable for printing (for which air permeability, surface area, hydrostatic head, etc. are irrelevant), such parameters were not measured and reported therein. Accordingly, Appellants tried to select from among the comparative examples of the present application, which were tested for barrier property parameters, the one or two which might most closely represent C.E. 1 of Harriss et al.

In this regard, C.E. A and C.E. B of the present invention bracket the polymer concentration and spin temperature parameters of Harriss et al.'s C.E. 1. Comparative Example A uses a spin temperature below that of Harriss et al.'s C.E. 1, and C.E. B uses a spin temperature above that of Harriss et al., but still outside that of the present claims. Notably, the spin temperature of C.E. B is within the scope of the spinning temperatures of Example V of Blades et al., and as such, can be considered to be an example even closer to that of the present invention than Harriss et al.'s C.E. 1. However, unlike Harriss et al.'s example, C.E. B of the present application is a point bonded sample. In contrast, C.E. A of the present application is a full surface bonded sample, similar to Harriss et al., which is disclosed to have been bonded on a Palmer bonder against a smooth metal drum. Those of skill in the art are well aware that bonding conditions will have significant effects on barrier properties such as air permeability (Frazier, Gurley Hill) and liquid resistance (hydrostatic head).

Accordingly, Appellants submit that the Harriss et al. C.E. 1 would be expected to have properties somewhere between those of C.E. A and C.E. B of the present application. The full surface bonded C.E. A has an air permeability too low to be measured by the Frazier technique, and a GH value of 90 seconds. Comparative Example B, which is point bonded (and softened, imparting even more air permeability) is still too low in air permeability to be measured by the Frazier technique, and has a GH value of 8 seconds. (The relationship between Frazier and Gurley Hill is discussed at page 4, lines 18-26 of the present specification). Thus, it seems clear that Harriss et al.'s C.E. 1 could not meet the air permeability limitations of claim 29 (at least 2 cfm/ft²) or claim 30 (GH < 6 seconds), even if given the most favorable assumption that it is closer to C.E. B than to C.E. A.

Likewise, C.E. B of the present invention is measured for surface area, in both Tables 2 and 3. While the measurements differ slightly, both are well above the

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upper surface area limit in claims 28-30: "less than 10 m²/g". Thus, it seems clear that a material which is flash spun under conditions even closer to the present claims than the closest prior art example of Harriss et al. will not meet the present claim limitations, let alone the Harriss et al. closest prior art example, C.E. 1.

2. In the above-quoted passage, the Examiner asserts that Appellants have not provided any evidence that any of Frazier, Gurley Hill, hydrohead, crush value, or surface area parameters of the present claims are "unexpected". In response, Appellants direct the Board's attention to page 14, lines 4-25 of the present specification, wherein Appellants' discuss surface area obtainable by the present invention, and state in part:

Normally, one would expect that as fibers become finer, their surface area would increase. With the plexifilamentary fibers of the invention, the fine fibers surprisingly have lower surface areas. (Emphasis added).

So, at least as to surface area, Appellants have certainly suggested and demonstrated an unexpected result of the present invention over the closest prior art example (Harriss et al. C.E. 1). As to the other parameters, neither Harriss et al. nor Blades et al. even suggest making measurements of Frazier, Gurley Hill, crush value, or hydrostatic head, let alone improving same.

3. Finally, the Examiner suggests that the performance values in question would have been inherent in the Harriss et al. sheets, if Harriss et al. were modified in the manner suggested by Blades et al. Appellants respectfully submit that what the Examiner proposes is a comparison of the present invention against itself, a situation declared untenable by the CCPA:

The board added:

* * * the affidavit is silent as to the results obtained when the high molecular weight polyethylene of Hoerger et al. is substituted for the polyethylene of Noeske. This is the essence of the Examiner's rejection and it would appear that such a substitution would inherently yield a product substantially the same as that claimed.

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We do not agree with the board that a high molecular weight polyethylene of Hoerger should have been substituted for the polyethylene of Noeske if comparative data are to be presented for this, we think, would amount to requiring comparison of the results of the invention with the results of the invention. Nor can we agree that appellants' composition are unpatentable because such a process "would inherently yield" a product substantially the same as that claimed, since that position implies that any and all products of obvious processes are unpatentable by reason of their being the "inherent" results of those processes. In re Chapman, 357 F.2d 418, 422, 148 USPQ 711 (CCPA 1966); emphasis added.

Further,

[T]he comparative showing "must be sufficient to permit a conclusion respecting the relative effectiveness of applicant's claimed compounds and the compounds of the closest prior art," In re Payne (citation omitted), and must "provide an adequate basis to support a legal conclusion of unobviousness." In re Johnson (citation omitted)...It is not required that the claimed invention be compared with subject matter that does not exist in the prior art. The applicant is not required to create prior art, nor to prove that his invention would [not] have been obvious if the prior art were different than it actually was. In re Gelger, 815 F.2d 686, 689-690, 2 USPQ2d 1276 (Fed. Cir. 1987), concurrence by Judge Newman (emphasis added).

Accordingly, Appellants respectfully submit that the comparison related above, and during prosecution (Appellants' Response of January 19, 2006, page 3) should have resulted in withdrawal of the rejection over Harriss et al. in view of Blades et al., and all other rejections based upon that combination, since Appellants have presented adequate evidence to (1) rebut the suggestion that the presently claimed parameters would inherently be present in the Harriss et al. C.E. 1 sheet, and (2) demonstrated unexpected improvements over an example even closer to the present claims than that of the closest prior art.

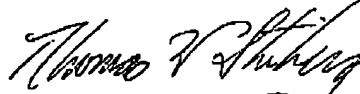
In the event the Board decides to maintain the Examiner's rejections, Appellants respectfully request that the Board address each rebuttal raised in this Reply Brief, seriatim, in order to clarify issues for further appeal.

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The Board of Appeals is respectfully requested to remand this application to the Examiner with a direction to allow the claims.

Respectfully submitted,



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TWS:fgl